

*PEOSIDRILUS BIPROSTATUS* N. G., N. SP., A MARINE  
TUBIFICID (OLIGOCHAETA) FROM THE  
EASTERN UNITED STATES

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*Abstract.*—A new monotypic genus *Peosidrilus* is established for the marine tubificid *P. biprostatus* n. sp. from New Jersey and North Carolina. The species is characterized by its possession of cylindrical atria ending in large, protrusible penes, two pairs of pedunculate prostate glands, paired spermathecae, and bundles of penial setae. *Peosidrilus* appears closely related to *Phallogdrilus* Pierantoni, 1902.

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A new tubificid oligochaete was found at several stations on the continental shelf off New Jersey, in the course of a Bureau of Land Management baseline study made by staff at the Virginia Institute of Marine Science (principal investigator, Dr. D. Boesch). An additional specimen was found in coastal water of North Carolina, during a stay at the Duke University Marine Laboratory, Beaufort, N.C. The tubificid represents a new monotypic genus within the sub-family Phallogdrilinae Brinkhurst, 1971.

#### Material and Methods

Specimens of *P. biprostatus* n. g., n. sp. from New Jersey were placed at our disposal by Dr. R. J. Diaz, Virginia Institute of Marine Science. Most of the worms were stained in Fast Green FCF, a few others in paracarmine. The microscopical studies were then made on either dissected or whole-mounted individuals. The specimen from North Carolina was fixed in Bouin's fluid, sectioned and stained in Heidenhain's haematoxylin.

The type-series of the new species is deposited in the United States National Museum of Natural History (USNM), Smithsonian Institution, Washington, D.C.

#### *Peosidrilus*, new genus

*Type-species.*—*Peosidrilus biprostatus* n. sp., by original designation.

*Etymology.*—Worm ('drilus' Greek) with penis ('peos' Greek). Gender masculine.

*Definition.*—Marine tubificids. Hair setae absent. Penial setae present ventrally in XI. Spermathecal setae absent. Male and spermathecal pores paired in XI and X respectively. Coelomocytes, if present, small and sparse, not of the 'Rhyacodriline-type.'

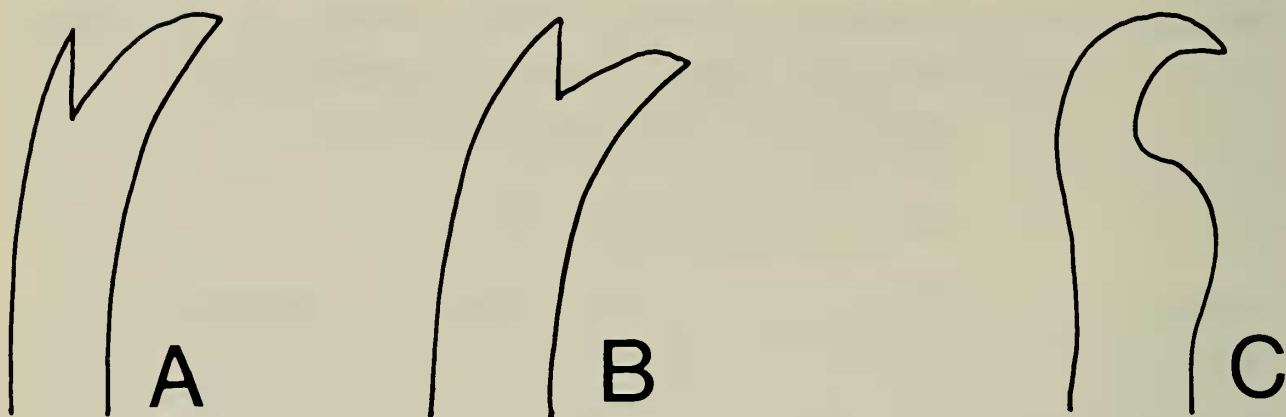


Fig. 1. *Peosidrilus biprostatus*: A, Ectal tip of anterior somatic seta; B, Ectal tip of posterior somatic seta; C, Ectal tip of penial seta.

Vasa deferentia ciliated, entering apical, ental ends of atria. Atria cylindrical and ciliated, each bearing 2 pedunculate prostate glands, one at ental, one at ectal end. Atria entering, but separated by constriction from, large penes enclosed in deep penial sacs. Spermathecae paired, filled with random masses of sperm. Spermatophores not developed.

*Peosidrilus biprostatus*, new species

Figs. 1–2

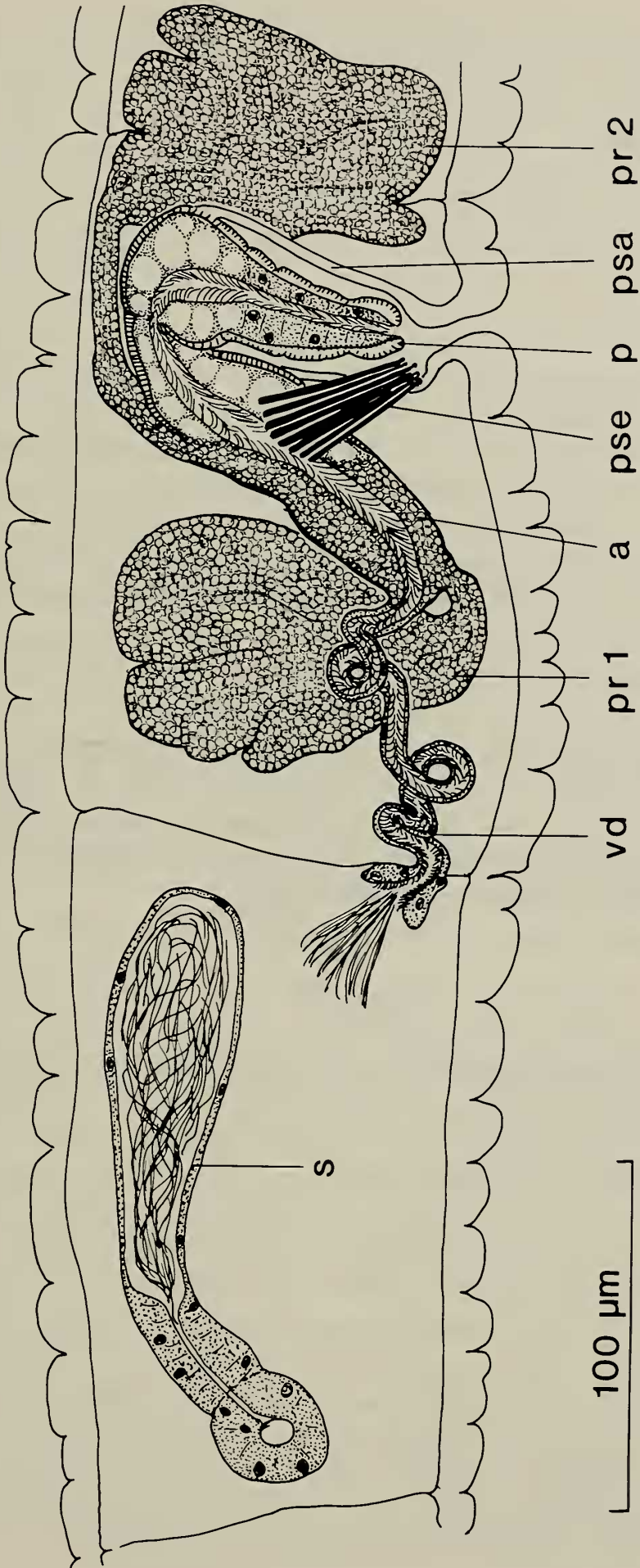
*Holotype*.—USNM 57074, a whole-mounted specimen.

*Type-locality*.—Continental shelf off New Jersey, U.S.A., 39°29.9'N, 73°10.1'W, 41 m, coarse sand (type date: Aug. 1976).

*Paratypes*.—USNM 57075–57078. One whole-mounted spm from the type-locality. Three whole-mounted and 4 dissected spms from 39°15.2'N, 74°09.2'W, 24 m, coarse sand (Nov. 1975). One whole-mounted spm from 39°15.2'N, 74°09.1'W, 25 m, coarse sand (June 1976). Sections of genital region of one spm from Beaufort area, North Carolina: at Shackleford Point, E of buoy N"2", 34°41'14"N, 76°38'30"W, 5.5 m, coarse sand with some shell gravel (*Amphioxus*-sand) (Oct. 25, 1977; C. E. coll.).

*Other material*.—In R. O. Brinkhurst collection: 5 spms from various stations off New Jersey, depths ranging from 17 to 73 m, mostly coarse sands. In C. E. collection: 15 spms from same area, depths from 16 to 63 m, coarse or medium sands.

*Description*.—Length (5 spms) 6.9–9.5 mm, 54–62 segments. Prostomium rounded, about as long as broad. Clitellum well developed on ½ X–XII of fully mature specimens. Somatic setae (Fig. 1A–B) bifid, with upper teeth much thinner and shorter than lower (upper teeth become somewhat broader posteriorly; Fig. 1B). Bifids 3–4 per bundle throughout body, up to 47  $\mu$ m long in V–VI, in other parts of body slightly shorter. Ventral setae of XI modified into penial bundles, each of which contains 7–13 straight, but ectally strong-



ly hooked, penial setae (Fig. 1C). Penials 30–37  $\mu\text{m}$  long (may vary within bundle), about 2.5  $\mu\text{m}$  thick. Male pores paired, located in line with ventral setae in posterior part of XI. Spermathecal pores paired, located laterally in most anterior part of X, very near intersegmental furrow IX/X.

Pharyngeal glands in IV–VI. Male genital system (all structures paired) (Fig. 2): vas deferens (*vd*) ciliated, slender (6–8  $\mu\text{m}$  thick), longer than atrium; vas deferens entering apical, ental end of cylindrical atrium; atrium (*a*), 90–140  $\mu\text{m}$  long, 27–37  $\mu\text{m}$  wide, with outer muscular lining (very slender in ental part, up to 5  $\mu\text{m}$  thick in ectal part of atrium), and inner ciliated epithelium, which is densely granulated in ental and in dorsal-middle part of atrium; ventral-middle and ectal parts of atrial epithelium generally non-granulated, but consisting of very large, apparently vacuolized cells, one large prostate gland (*pr 1*) attached by stalk to ental, sub-apical part of atrium, near entrance of vas deferens; a posterior large prostate (*pr 2*) connected with dorsal middle-to-ectal part of atrium by means of a very long stalk; atrium separated from large, pear-shaped, 80–120  $\mu\text{m}$  long, penis (*p*) by constriction; penis basally bulbous and about 30–40  $\mu\text{m}$  wide, ectally tapering with a slightly bulbous tip, 12–16  $\mu\text{m}$  wide, internal epithelium of penis ciliated; epithelium with large, vacuolized cells in basal part of penis; penis enclosed in deep penial sac (*psa*), into which also protrude ectal tips of penial setae (*pse*); cuticular penial sheath absent. Spermathecae (Fig. 2, *s*) paired and cylindrical, 110–170  $\mu\text{m}$  long and generally not wider than 25–40  $\mu\text{m}$ , divided into short, but distinct, thick-walled ducts, and thin-walled ampullae. Spermathecal ampullae filled with random masses of sperm.

*Habitat*.—Subtidal, coarse to medium sands.

*Distribution*.—New Jersey and North Carolina, U.S.A. (NW Atlantic).

### Discussion

*Peosidrilus* is clearly a phallodriline genus, and it appears most closely related to *Phallodrilus* Pierantoni, 1902, which also is characterized by having more or less cylindrical atria with 2 pairs of prostate glands. The penial setae of *P. biprostatus* are almost identical to those of, for instance, *Phallodrilus coeloprostatus* Cook, 1969, and *Phallodrilus prostatus* (Knöllner, 1935). However, the present definition of *Phallodrilus* (Erséus, in press) does not include species with true penes, organs that are very conspicuous in the new species. It is not considered appropriate to extend *Phallodrilus* to include *biprostatus*, but to establish the new genus *Peosidrilus* for it.

*Aktedrilus* Knöllner, 1935, is another phallodriline genus with 2 pairs of prostates and true penes. However, all its forms are characterized by unpaired spermathecae and the complete absence of penial setae (Finogenova, 1976; Erséus, in preparation). The development of penes in both *Aktedrilus* and *Peosidrilus* might well be just a matter of convergence.

The histological differentiation in the different parts of the atrium of *P. biprostatus* could be taken as an indication of a close phylogenetic relationship to *Spiridion* Knöllner, 1935, which has been reviewed separately (Erséus, 1979). The atrium of *Spiridion* consists of a granulated ental part and a non-granulated ectal part, the latter of which has a winding lumen, and which can be everted during copulation at least in *S. insigne* Knöllner, 1935. However, *Spiridion* possesses neither true penes nor posterior prostates.

#### Acknowledgments

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